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[0028]

[EMBODIMENT OF THE PRESENT INVENTION]

Based upon preferred embodiments shown by attached drawings, the following description will discuss an image-pickup system, an image-processing system and an image providing system in which these systems are connected as well as an image-pickup camera, an image-editing device, an image order form for each subject and an image-ordering method for each subject in accordance with the present invention in detail.

[0029]

Figs. 1(a) and 1(b) are block diagrams that schematically show the outline of one embodiment of an image-pickup system and an image-providing system in accordance with the present invention. An image-pickup system 10, shown in Fig. 1(a), is basically constituted by a pair of a transmission-receiving-use bidirectional communication device 12 of the user and an image-pickup unit 14 including an image-pickup device 16 typically represented by a digital camera. Here, the image-pickup unit 14 is provided with the image-pickup device 16 used by the user for picking up images, a transmission-receiving-use bidirectional communication device 18 on the unit side, which transmits and receives signals to and from the communication device 12 of the user side and an image memory 20 which memorizes (stores) image data of an image picked up by the image-pickup device 16 in association with information such as an identification code and number (hereinafter, referred to as ID information) of the user received from the communication device 12 from the user side.

[0030]

Here, the image (image data), stored in the image memory 20 in association with the user ID information, is inputted to an image-processing system (see reference numeral 26 in Fig. 2), which is not shown in these drawings, and will be described later, and subjected to image-processing treatments; then, preferably, the image is outputted as, for example, a printed image, an image-data recording medium and the like for storing the processed image data, or the processed image data is displayed on a monitor, or net-work delivered through the Internet or the like. The input of the ID information to the image memory 20 or the input of image data to the image-processing system 26 may be given through a communication line, or the image memory 20 may be taken out of the image-pickup unit 14, transported as a portable memory, and set in an image-processing system 26 to be read out.

[0031]

The image-providing system 22, shown in Fig. 1(b), is provided with an image-pickup system 10a having a plurality of communication devices 12 and a plurality of image-pickup units 14a, a server 24 that is connected to these image-pickup units 14a, and stores image data acquired by the image-pickup devices, ID information and the like, and the image-processing system 26 which processes the image data stored in the server 24, and preferably outputs images in the form of prints, etc. (print output, medium output, monitor display, network delivery, etc.). The image-pickup system 10a of the image-providing system 22, exemplified in the drawings, is characterized by an arrangement in which the image memory 20 of the image-pickup unit 14 of the image-pickup system 10

shown in Fig. 1 is removed, and an image-pickup unit 14a having an image-pickup device 16 and a communication device 18 are installed with the memory thus removed being commonly integrated in the memory 24a of the server 24; thus, the system is further simplified to be handled with ease. Here, in the image-pickup system 10a used in this image providing system 22, one portion or all the portions of the image-pickup unit 14a may be replaced by the image-pickup unit 14 to be using in the image-pickup system 10, or a temporary memory, which temporarily memorizes (stores) image data corresponding to one to several images, may be installed in one or all the image-pickup units 14a.

[0032]

Fig. 2 is a block diagram that shows a specific structure of one embodiment of the image providing system 22 shown in Figs. 1(a) and 1(b). The image providing system 22, shown in Fig. 2, is provided with a plurality of image-pickup systems 10, 10a and 10b having different structures and types, a server 24, and a plurality of image-processing systems 26. Here, as described above, the image-pickup system 10 is provided with the transmission-receiving-use bidirectional communication device 12, and an image-pickup unit 14 having a digital camera 16a serving as an image-pickup device, a transmission-receiving-use bidirectional communication device 18 and an image memory 20 that stores picked-up images of the digital camera 16a as image data. Moreover, as described above, the image-pickup system 10a is provided with the communication device 12 and an image-pickup unit 14a having a digital camera 16a and a communication device 18. Both of the image-pickup systems 10 and 10a

are image-pickup systems that spontaneously carry out image-pickup processes. Therefore, each of the image-pickup units 14 and 14a is an image-pickup unit of a type that spontaneously picks up an image of the user (customer) having the transmission-receiving-use bidirectional communication device 12 as a subject.

[0033]

In contrast, the image-pickup system 10b has a transmission-use communication device 12a and an image-pickup unit 14b having a digital camera 16a serving as an image-pickup device, a receiving-use communication device 18a and a monitor 28, and in this image-pickup system, an image-pickup process is carried out based upon the will of the user. Therefore, the image-pickup unit 14b is an image-pickup unit of a user-instruction type, which, upon request from the user who has the transmission-use communication device 12a based upon his or her own will, picks up an image of the user or the related person. In this manner, the image providing system 22 relating to the present embodiment appropriately arranges the image-pickup unit 14a and the image-pickup unit 14b of the two types in accordance with image-pickup points, in addition to the image-pickup unit 14 so that, in association with the communication devices 12 and 12a owned (possessed or carried) by the user, it constitutes image-pickup systems 10, 10a and 10b. Here, in the image providing system 22 exemplified by the drawing, a plurality of sets, each having three kinds of devices, that is, the image-pickup unit 14, the image-pickup unit 14a and the image-pickup unit 14b, are installed; however, the image providing system 22 of the present invention is not

intended to be limited by this structure, and may have at least one of the image-pickup unit of at least one kind of these, or may have at least one image-pickup unit (not shown) that further has an image memory installed in the image-pickup unit 14b.

[0034]

Fig. 3 shows a specific structure of one embodiment of the image-pickup unit 14 of the image-pickup system 10 of the spontaneous image-pickup type. In the image-pickup unit 14a shown in Fig. 3, reference numeral 16 is an image-pickup-use digital camera as described earlier, 18 is a transmission-receiving-use communication device on the unit side, which transmits an inquiry signal to the transmission-receiving-use communication device 12 that is possessed or carried by the user at the time of picking up an image, and receives image-pickup information containing the user ID and the like that has been registered in the communication device 12, and is released in response to the inquiry signal, 20 is an image memory that memorizes (stores) the image (image data) picked up by the digital camera 16a as described above in association with the ID information, 30 is an image processing unit that carries out predetermined image processing treatments on the image (image data) that has been picked up by the digital camera 16a and stored in the image memory 20, 32 is a communication controlling unit which controls the communication line to at least one of the server 24 and the image-processing system 26, and 34 represents a control unit (CPU/memory) that entirely controls the present image-pickup system 10a and the image-pickup unit 14a. Additionally, in place of the digital camera 16a, another image-pickup means and another

image information storing means may of course be used appropriate in combination. Moreover, in the case when the image memory 20 is prepared as a portable memory, the communication control unit 32 may be omitted. Furthermore, the communication control unit 32 may control transmitting and receiving processes between the communication devices 12 and 18.

[0035]

Fig. 4 shows a specific structure of one embodiment of the image-pickup unit 14a of the image-pickup system 10a of the spontaneous image-pickup type. In the image-pickup unit 14a shown in Fig. 4, reference numeral 16 represents the above-mentioned digital camera, 18 is the above-mentioned transmission-receiving-use communication device on the unit side, which transmits and receives the inquiry signal and the image-pickup information to and from the communication device 12 on the user side, 30a is an image-processing unit which carries out predetermined image-processing treatments on images (image data) picked up by the digital camera 16a, 32 is the above-mentioned communication control unit, and 34a represents a control unit (CPU/memory) that entirely controls the present image-pickup system 10a and the image-pickup unit 14a.

[0036]

Fig. 5 shows a specific structure of one embodiment of the image-pickup unit 14b of the image-pickup system 10b of the user instruction type. In the image-pickup unit 14b shown in Fig. 5, reference numeral 18 represents a receiving-use communication device on the unit side which receives an image-pickup requesting signal from the user that is transmitted from a transmission-use communication device 12a that is

possessed or carried by the user, 16 is the above-mentioned digital camera, 30b is an image-processing unit which carries out predetermined image-processing treatments on images picked up by the digital camera 16a, 28 is a monitor that is used for displaying a picked-up image of the digital camera 16a that has been subjected to the image-processing treatments by the image-processing unit 30b, 32 is the above-mentioned communication control unit, and 34b represents a control unit (CPU/memory) that entirely controls the present image-pickup system 10b and the image-pickup unit 14b. Here, in the image-pickup unit 14b exemplified in the drawing, the user-side transmission-use communication device 12a and the unit-side receiving-use communication device 18a are utilized as the communication devices on the user side and the unit side; however, not limited by this arrangement, the present invention may use a user-side transmission-receiving-use bidirectional communication device 12 in place of the user-side transmission-use communication device 12a, or may use a unit-side transmission-receiving-use bidirectional communication device 18 in place of the unit-side receiving-use communication device 18a.

[0037]

With respect to the communication devices 12 and 12a used as a transmitter-receiver or a transmitter that is held or carried by the user in the image-pickup systems 10, 10a and 10b, not particularly limited, any device may be used as long as it allows at least the image-pickup units 14, 14a and 14b to exchange necessary information with the communication devices 18 and 18a, and for example, so-called small-size portable transmitters may be used, and, preferably, those of an IC card type capable

of transmission-receiving processes or transmission process, such as non-contact-type (radio) IC cards that are utilized as IC pass tickets, and those of battery-built-in type non-contact ID cards and electromagnetic induction-type (no-power-supply) non-contact ID cards, etc. capable of transmitting-receiving processes or transmitting process, which are used for commodity-monitoring tags in an electric wave commodity inspection system, may be preferably used. Here, the specific structures of communication devices 12, 12a, 18 and 18a will be described later. Additionally, the respective image-processing units 30, 30a and 30b of the above-mentioned image-pickup units 14, 14a and 14b are not necessarily installed; however, it is preferable to carry out image-processing treatments, such as setups, and image data processes such as conversion to image data suitable for storing in the image memory 20 and the server 24, and for displaying on the monitor 28.

[0038]

With respect to the server 24, any memory may be used as long as it has an image memory 24a having a sufficient capacity for memorizing (storing) image data of images the number of which is necessary or sufficient for providing images for use in prints in the image providing system 22 together with image-pickup information including ID information relating to the data. Moreover, the image-processing system 26, which will be described later in detail, receives image data together with image-pickup information from the image-pickup unit 14 or the server 24, retrieves for an image required for outputting so as to select a suitable image, carries out predetermined image processes thereon, further carries out editing

processes, if necessary, converts it to formats in accordance with an image output such as a print output, a medium output, a monitor display and a network delivery, and forms a photographic print on which the processed image has been reproduced in a print-forming unit and outputs the resulting print. Here, in addition to the print output, or instead of the print output, the image-processing system 26 may output an image-data storing medium in which the image data of the processed image, or display the processed image on a monitor so as to deliver the processed image data through the Internet. Here, in the above-mentioned drawings 3 to 5 and drawing 6 which will be described later, narrow arrows represent flows of control signals, and thick arrows with double lines represent flows of data such as image data and ID information (ID data).

[0039]

Moreover, the image-processing system 26, shown in Fig. 1(b) and Fig. 2, is installed, for example, in a center having a reception counter to the user, and has an arrangement one embodiment of which is specifically shown in Fig. 6. In the image-processing system 26 shown in Fig. 6, reference numeral 36 represents a communication control unit which is connected to the image-pickup units 14, 14a and 14b, and carries out controlling operations on a communication line to the server 24 for memorizing (storing) image-pickup information including image data and identification numbers (ID information) and 38 represents an image-processing unit which carries out various image processes including editing processes, composing processes and the like of image data that is transmitted from the image-pickup units 14, 14a and 14b.

[0040]

Moreover, reference numeral 40 represents a print-forming unit which carries out fixing and developing processes of a reproduced image of the image data that has been processed in the image-processing unit 38 on photographic paper to prepare a photographic print to be handed to the user. This print-forming unit 40 may include various types of known printers such as a digital printer using a laser, LEDs or the like to carry out fixing and developing processes on photographic paper, a sublimation-type printer and an ink-jet printer. Here, the image-processing system 26 in the drawing is also provided with an medium outputting unit 40a that outputs an image data recording medium, such as an MO, FD, smart media and ZIP, which records image data that has been processed in the image-processing unit 38, and a net delivery unit 40b that delivers the processed image data through a communication network such as the Internet; however, the present invention is not intended to be limited by these, and it is only necessary to have any one of the print-forming unit 40, the medium outputting unit 40a and the net delivery unit 40b.

[0041]

Furthermore, reference numeral 44 represents an image-pickup information reading unit that controls the communication device 12 or 12a, such as a transmitter-receiver and a transmitter, of the user, and reads image-pickup information including an identification number (ID information) recorded therein, 46 is an image retrieving unit for retrieving for the image corresponding to the identification number contained in the image-pickup information read by the image-pickup information reading

unit 44, 48 is a monitor that displays an image found by the image-retrieving unit 46, 42 represents an operation unit that specifies the image to be printed and also specifies editing processes, and 50 represents a control unit (CPU/memory) that entirely controls the image-processing system 26.

[0042]

Fig. 7 shows a specific structural example of one embodiment of this image-processing unit 38. As shown in Fig. 7, the image-processing unit 38 includes an image pre-processing unit 38a, a read image memory (frame memory) 38b, an image-processing treatment unit 38c, a composite treatment unit 38d, a D/A converter 38e and a template image (background image) memory 38f. Here, reference numeral 50 is a CPU/memory that constitutes the above-mentioned control unit. The above-mentioned template image memory 38f may be formed in the memory of the control unit 50.

[0043]

The image pre-processing unit 38a carries out various correction processes, such as off-set correction on the (digital) image data directly received from the server 24 or the image-pickup unit 14, a Log conversion and a shading correction, if necessary. The read image memory 38b stores image data that has been subjected to the pre-processing. The image processing treatment unit 38c forms the density histogram of the image data obtained as described above, and calculates the amount of image feature thereof so as to set image-processing conditions such as color/gradation correction, magnification correction and sharpness

correction.

[0044]

Further, in accordance with the set image processing conditions, the image-processing treatment unit 38c carries out image treatments on the image data. With respect to the image treatments carried out in the image-processing treatment unit 38c, if necessary, rotation or inversion with respect to the longitudinal and lateral directions of an image, and corrections on color and/or gradation of the image are carried out, and in accordance with the set magnification, image treatments of enlargement/reduction are carried out, a sharpness process (sharpness-applying process) using a unsharpness mask and the like, etc. are then carried out.

[0045]

The image that has been processed in the image-processing treatment unit 38c is composed with a template image in the composite treatment unit 38d on the succeeding stage, if necessary, and then displayed on the monitor 48 as a composite image. Here, the template image to be composed is read out from the template image memory 38f based upon a specification (selection) by the user through the operation unit 42.

[0046]

In the above-mentioned template image memory 38f, digital image data of background images (also referred to as template images) for use in various commemorative image-pickup situations and a plurality of kinds of template characters and template bitmap image data are stored. As described earlier, when specified by the user through the operation unit 42,

these data are read out from the template image memory 38f by the control unit 50.

[0047]

Here, a digital camera 16a in the image-pickup unit 14, 14a or 14b shown in Figs. 3 to 5 is preferably prepared as a digital camera of the so-called megapixel class or more, and preferably has various functions inherent to the digital camera, such as an auto-exposure control (AE) function, an auto-focus (AF) function, a remote control image-pickup function and an auto-white-balance (AWB) function. Moreover, the monitor 28 of the image-pickup unit 14b, shown in Fig. 5, is only used for displaying an image picked up by the digital camera 16a (more specifically, an image that has been subjected to appropriate image treatments), and needs not have high performances.

[0048]

As described earlier, the image-processing unit 30, 30a or 30b is not necessarily required; however, in the case when the image-processing unit 30, 30a or 30b is installed, image treatments to be applied to the image picked up by the digital camera 16a in this device may include various treatments, such as a gradation-adjusting treatment, a density-adjusting treatment and a pixel density conversion to be carried out to provide a suitable print size.

[0049]

The communication control unit 32 in the image-pickup unit 14, 14a or 14b and the communication control unit 36 in the image-processing system 26 control transmitting and receiving processes of various pieces of

information such as identification number (ID information) and image-pickup information and image data of a picked-up image between the image pickup unit 14, 14a or 14b and the server 24 as well as between the image-processing system 26 and the server 24. Additionally, it is taken for granted that these communications may be carried out through radio.

[0050]

More specifically, in a comparatively independent area such as a theme park, a LAN (Local Area Network) or the like may be prepared, and it is preferable to connect a plurality of image-pickup units 14, 14a, 14b ..., the server 24 and the image-processing system 26 (a plurality of which may be prepared) with each other. The above-mentioned communication control units 32 and 36 have functions for allowing communication between the respective points connected to the LAN.

[0051]

The above-mentioned image-processing unit 38 have such functions that, based upon image data acquired by the digital camera 16a in the image-pickup unit 14, 14a or 14b (or the resulting image data obtained by subjecting these image data to image processes in the above-mentioned image processing unit 30, 30b or 30a), image-processing conditions are determined, and the image treatments corresponding to the determined conditions are carried out on the above-mentioned image data to form output image data to be recorded, and editing and composing processes are further carried out thereon, if necessary, to output the resulting data to the print forming unit 40.

[0052]

With respect to the above-mentioned image treatments, in general, treatments, such as color-balance adjustments, contrast correction (gradation processes), brightness correction, filtered fixing process (compression/expansion of density dynamic range), saturation correction, sharpness (sharpness-applying) treatment and red-eye correction process at the time of a stroboscopic image-pickup process, are carried out. These processes are carried out by appropriately combining calculations based upon arithmetic expressions, operational calculations based upon LUT (Look Up Table), matrix (MTX) calculations and operational calculations using filters.

[0053]

In the image providing system relating to the present embodiment, upon entering the theme park, the user receives a transmitter-receiver or a transmitter (that is, the above-mentioned communication device 12, 12a) in which image-pickup information containing a mutually different identification number (ID information) has been registered. This identification number is used when each of various facilities including the image-providing system relating to the present embodiment is utilized. Here, the identification number (ID information) may be different depending on communication devices to be supplied to the users, or the same ID information may be used within a family, a couple or a group of friends; more preferably, in one group, one portion of the ID information is set to be commonly used with one of the rest portions being used for identifying each of the individual users. With this arrangement, even in the case of a photographic image to which the user is not joined, the user is

allowed to obtain the photograph containing the other user in the group or children, etc. in the family.

[0054]

The following description will discuss the communication devices 12, 12a, 18 and 18a to be used in the image-pickup system and image-providing system of the present invention in detail. First, Fig. 8 is a block diagram that shows a circuit structure of one embodiment of an image-pickup system 10c in which the transmission-receiving-use bidirectional communication devices 12 and 18 have been installed. As shown in this drawing, the image-pickup system 10c includes an ID card 12b functioning as a transmission-receiving-use bidirectional communication device 12 and an image-pickup camera 14c that functions as an image-pickup unit 14.

[0055]

This image-pickup camera 14c is provided with a transmission-receiving-use bidirectional communication device 18, an image-pickup unit 16b constituted by image-pickup devices such as a digital camera, a storing unit 20a constituted by an image memory and the like and a control unit 52 which controls the communication device 18, the image-pickup unit 16b and the storing unit 20a. Further, the communication device 18 has a modulation unit 54 that modulates transmission data such as inquiry information and the like, a transmission-receiving unit 56 and an antenna 56a that transmit the modulated transmission data modulated in the modulation unit 54 to an ID card 12b, and receives modulated data, such as ID information, transmitted from the ID card 12b, and a demodulation unit 58 that demodulates the

modulated receiving data such as the ID information received by the transmission-receiving unit 56.

[0056]

Here, the ID card 12b is provided with a storing unit 60 that stores registered ID information and the like, a control unit 62 that reads the ID information and the like from the storing unit 60 in response to inquiry information or the like from the image-pickup camera 14c, a modulation circuit 64 that modulates the ID information or the like received from the control unit 62, a transmitting-receiving unit 66 and an antenna 66a that transmit modulated transmission data such as ID information modulated in the modulation circuit 64, and also receive the modulated data such as the inquiry information transmitted from the image-pickup camera 14c, and a demodulation circuit 68 that demodulates modulated receiving data, such as the inquiry information, received by the transmission-receiving unit 66. With this arrangement, the control unit 62 controls the storing unit 60, the modulation circuit 64, the transmission-receiving unit 66 and the demodulation circuit 68.

[0057]

In the image-pickup system 10c as described above, the control unit 52 of the image-pickup camera 14c transmits inquiry information and the like to the modulation unit 54 as transmission data, the modulation unit 54 modulates the inquiry information and the like transmitted from the control unit 52 to modulated transmission data, and sends the resulting data to the transmission-receiving unit 56, and the transmission-receiving unit 56 transmits the modulated inquiry information from the antenna 56a in

predetermined intervals. Here, when the user having an ID card 12b enters an image-pickup available area of the image-pickup camera 14c, the transmission-receiving unit 66 of the ID card 12b receives modulated inquiry information and the like transmitted from the antenna 56a of the transmission-receiving unit 56 of the image-pickup camera 14c through the antenna 66a.

[0058]

In the ID card 12b, the transmission-receiving unit 56 sends the modulated inquiry information and the like received by the antenna 66a to the demodulation circuit 68, and the demodulation circuit 68 demodulates the modulated inquiry information and the like thus received, and sends the resulting data to the control unit 62 as the inquiry information and the like. In response to the inquiry information and the like from the image-pickup camera 14c, thus received, the control unit 62 reads out the registered ID information and the like stored in the storing unit 60, and sends this to the modulation circuit 64. The modulation circuit 64 modulates the ID information and the like, thus received, and sends the resulting data to the transmission-receiving unit 66, and the transmission-receiving unit 66 transmits the modulated ID information and the like toward the image-pickup camera 14c from the antenna 66a.

[0059]

In the image-pickup camera 14c, upon receipt of the modulated ID information and the like transmitted from the ID card 12b, the transmission-receiving unit 56 sends the modulated ID information and the like, thus received, to the demodulation unit 58, and the demodulation unit

58 demodulates the modulated ID information and the like to form ID information and the like, and sends the resulting information to the control unit 52 as received data. Upon receipt of the ID information and the like from the ID card 12b, the control unit 52 sends a control signal for image-pickup instruction to the image-pickup unit 16b, and holds the ID information and the like. Upon receipt of the control signal for image-pickup instruction, the image-pickup unit 16b picks up an image of the user having the ID card 12b, and sends the image data of the picked-up image back to the control unit 52. The control unit 52 allows the storing unit 20a to store the received image data in association with the ID information and the like that are preliminarily received data stored therein. Thus, the storing unit 20a stores the image data in association with the user ID information and the like.

[0060]

Fig. 9 is a block diagram showing one embodiment of an image-pickup system 10d in which a transmission-use mono-directional communication device 12a and a receiving-use mono-directional communication device 18a are installed. Here, the image-pickup system 10d shown in Fig. 9 has the same structure as that of the image-pickup system 10c shown in Fig. 8 except that, instead of transmitting ID information and the like upon receipt of the inquiry information and the like transmitted from the image-pickup camera 14c through the ID card 12b, the image-pickup camera 14d releases an electro-magnetic wave having electro-magnetic energy from a coil 72a of a transmission-receiving unit 72 so that the ID card 12c receives the electro-magnetic wave thus released

through a coil 74a of a transmission-receiving unit 74, and generates an induced current to allow a power-generation circuit 76 to generate power; thus, the respective circuits of the ID card 12c are driven as long as the power lasts, making it possible to transmit ID information and the like. Therefore, the same constituent elements are indicated by the same reference numerals, and the description thereof will be omitted.

[0061]

The image-pickup system 10d shown in Fig. 9 is provided with an ID card 12c functioning as a transmission-use mono-directional communication device 12a, and an image-pickup camera 14d that functions as an image-pickup unit having a receiving-use mono-directional communication device 18a. This image-pickup camera 14d is provided with the communication device 18a, an image-pickup unit 16b, a storing unit 20a and a control unit 52a that controls the communication device 18a, the image-pickup unit 16b and the storing unit 20a. Here, the communication device 18a is provided with a modulation unit 70 which, upon receipt of a frequency signal from the control unit 52a, generates a modulation signal used for generating an electro-magnetic wave having electro-magnetic energy to be directed to the ID card 12c, a coil 72a which serves as a transmission-receiving unit 72 that releases the electro-magnetic wave generated upon receipt of the modulation signal generated in the modulation unit 70 toward the ID card 12c, and also receives modulated data such as ID information and the like transmitted from the ID card 12c, and also serves as an antenna, and a demodulation unit 58 which demodulates the modulated data such as ID information and the like

received by the transmission-receiving unit 72 through the coil 72a.

[0062]

The ID card 12c is provided with a storing unit 60, a control unit 62a, a modulation circuit 64, and a coil 74a which serves as a transmission-receiving unit 74 that transmits the modulation transmission data such as ID information and the like that are modulated by the modulation circuit 64, and upon receipt of the electro-magnetic wave having electro-magnetic energy released from the image-pickup camera 14c, generates an induced current, and also serves as an antenna, and a power generation circuit 76 which receives the induced current generated in the coil 74a through the transmission-receiving unit 74, and generates power used for driving the storing unit 60 of the ID card 12c, the control unit 62a, the modulation circuit 64 and the transmission-receiving unit 74. Here, the control unit 62a controls the storing unit 60, the modulation circuit 64, the transmission-receiving unit 74 and the power generation circuit 76.

[0063]

In the image-pickup system 10d having this arrangement, in the image-pickup camera 14d, the control unit 52a sends a frequency signal to the modulation unit 70, and the modulation unit 70 modulates the frequency signal sent from the control unit 52a to a modulated signal, and sends this to the transmission-receiving unit 72, and the transmission-receiving unit 72 releases the modulated signal as an electro-magnetic wave having electro-magnetic energy from the coil 72a. In this case, when the user having the ID card 12c enters an image-pickup available area of the image-pickup camera 14d, the coil 74a of the ID card

12c receives the electro-magnetic wave released from the coil 72a of the transmission-receiving unit 72 of the image-pickup camera 14d, and generates an induced current.

[0064]

In the ID card 12c, the induced current generated in the coil 74a is allowed to flow through the power generation circuit 76 through the transmission-receiving unit 74 so that the power generation circuit 76 generates power in accordance with the induced current, and drives the respective circuits such as the control unit 62a of the ID card 12c, the modulation circuit 64, the transmission-receiving unit and the storing unit 60. The control unit 62, thus activated, reads out the registered ID information and the like stored in the storing unit 60, and sends the resulting information to the modulation circuit 64. The modulation circuit 64 modulates the received ID information and the like, and sends these to the transmission-receiving unit 74 so that the transmission-receiving unit 74 transmits the modulated ID information and the like toward the image-pickup camera 14d from the coil 74a. Here, the transmission-receiving unit 74 is allowed to continuously transmit modulated ID information and the like toward the image-pickup camera 14d as long as the power, generated in the power generation circuit 76, lasts.

[0065]

In the image-pickup camera 14d, upon receipt of the modulated ID information and the like transmitted from the ID card 12c through the coil 72a, the transmission-receiving unit 72 sends the received modulated ID information and the like to the demodulation unit 58, and the demodulation

unit 58 demodulates the modulated ID information and the like to form ID information and the like, and sends these to the control unit 52a as received data. Upon receipt of the ID information and the like from the ID card 12c, the control unit 52a sends a control signal for image-pickup instruction to the image-pickup unit 16b in the same manner as the control unit 52 of the image-pickup camera 14c so that an image of the user having the ID card 12c is picked up, and the image data of the picked-up image is sent back. The control unit 52a allows the storing unit 20a to store the image data in association with ID information and the like. Thus, the storing unit 20a stores the image data in association with the ID information and the like of the user.

[0066]

Here, the above-mentioned image-pickup system 10d is allowed to continuously transmit the modulated ID information and the like toward the image-pickup camera 14d from the ID card 12c as long as power generated from the power generation circuit 76 of the ID card 12c lasts; however, the present invention is not intended to be limited by this arrangement, and a battery may be placed instead of the power generation circuit 76 in the ID card 12c, with an antenna being placed instead of the coils 72a and 74a, a receiving unit and a transmission unit being respectively placed instead of the transmission-receiving units 72 and 74, modulated ID information and the like being always transmitted from the ID card 12c with the modulation unit 70 being omitted, the image-pickup camera 14d being allowed to only receive the modulated ID information and the like. Of course, in the arrangement of the above-mentioned

image-pickup system 10c also, modulated ID information and the like may be always transmitted from the ID card 12b, with the image-pickup camera 14c being only allowed to receive the modulated ID information and there like.

[0067]

Moreover, these image-pickup systems 10c and 10d may use an image-providing system 22 in place of the above-mentioned image-pickup systems 10, 10a and 10b, or together with these. The image-pickup system, the image-processing system and the image-providing system in which these are connected as well as the image-pickup camera are basically arranged as described above.

[0068]

The following description will discuss the image-pickup system relating to the present embodiment, arranged as described above, and functions of the image-providing system. First, Fig. 10 shows a flow chart that shows one example of the operations of the user on the communication device 12a in the image-pickup system 10b shown in Fig. 2 and Fig. 5, and the corresponding image-pickup operations relating to the operations on the image-pickup unit 14b side. The following description will discuss one example of the image-pickup operations in the image-pickup system 10b based upon Fig. 2, Fig. 5, Fig. 6 and Fig. 10.

[0069]

When the user becomes aware of the arrival of "an image-pickup point at which an image can be picked up in accordance with the request" through the corresponding guidance, he or she puts an image-pickup

request by using the communication device 12a, if desired (step 601). This image-pickup request is given by operating the communication device 12a so that image-pickup information including the identification information such as the above-mentioned identification number and the like is transmitted. This image-pickup information is received by the receiving-use communication device 18a on the image-pickup unit 14b side (step 611). The image-pickup unit 14b side reads the identification number of the requester (the user) from the received information (step 612), and an image of the requester is taken by using the digital camera 16a (step 613). Here, the image-pickup operation by the digital camera 16a is not limited to that of the requester, but is allowed to include any person relating to the requester and animals and the like; moreover, if confirmation is obtained, the requester needs not be included.

[0070]

Here, in the image-pickup unit 14b, the picked-up image is displayed on the monitor 28, asking the user to confirm the image (step 614). In response to this, the user determines the image (step 602), and the result (instruction) is directed to the image-pickup unit 14b (step 603); thus, if the result is positive, the image-pickup unit 14b transmits the image data and image-pickup information including the user's identification number and the other information to the server 24.

[0071]

Here, if the user is not satisfied with the picked-up image at this time, and wishes to carry out the image-pickup operation again (re-tray of the image-pickup operation), the image-pickup operation has to be carried

out again; thus, in preparation for this case, the image-pickup unit 14b may be arranged so as to re-execute the above-mentioned steps 611 to 615. Upon completion of the image-pickup process (with which the user is satisfied) (step 615), the image-pickup unit 14b transmits the corresponding image data together with the image-pickup information containing the identification information of the user and the other information to the server 24.

[0072]

The server 24 records the received image data in association with the identification number, and by using the identification number as the key for retrieval, the image retrieving unit 46 in the image-processing system 26 shown in Fig. 6 is then allowed to retrieve for the image data with the same identification number and to output the resulting data.

[0073]

With this arrangement, later, the user is allowed to input the identification number to the image-processing system 26 in a center through the communication device 12 or 12a at the reception counter for the user placed in the center; thus, preparation has been completed for the user to obtain images that have been transmitted from the corresponding image-pickup unit 14b, and accumulated in the above-mentioned server 24, in various forms such as photographic prints, image data recording media (image data) and network delivery (image data).

[0074]

Next, Fig. 11 shows a flow chart that indicates one example of the operations of the user on the communication device 12 in the image-pickup

system 10a shown in Fig. 2 and Fig. 4, and the corresponding image-pickup operations relating to the operations on the image-pickup unit 14a side. Referring to Fig. 2, Fig. 4, Fig. 6 and Fig. 11, the following description will discuss operations between the user (communication device 12) and the image-pickup unit 14a in the image-pickup system 10a, that is, image-pickup operations in response to inquiry from the image-pickup unit 14a.

[0075]

The operations in the image-pickup unit 14a feature that, at a point in which the image-pickup unit 14b is placed, an inquiry for image-pickup information is given from the communication device 18 of the image-pickup unit 14a to the communication device 12 of the user, and in response to this, the corresponding image-pickup information is transmitted from the communication device 12 of the user to the communication device 18 of the image-pickup unit 14a, and acquired (recorded) by this. Here, the image-pickup operation in this case is carried out in predetermined synchronized timing set in the image-pickup unit 14a.

[0076]

In other words, the image-pickup unit 14a monitors whether or not predetermined image-pickup timing is met, that is, for example, whether or not an amusement cart has come to a predetermined image-pickup point (step 711), and when the predetermined image-pickup timing is met, a predetermined image-pickup operation is carried out (step 717), while an inquiry for image-pickup information is given to the user by using the communication device 18 (step 712).

[0077]

Upon receipt of the inquiry (step 701), the communication device 12 of the user immediately returns image-pickup information including the identification number (step 702). At this time, if the image-pickup information receipt signal from the image-pickup unit 14a is not returned, the communication device 18 repeats the returning process of the image-pickup information predetermined times (step 703).

[0078]

The image-pickup unit 14a monitors the response from the communication device 12 of the user (step 713), and upon receipt of the response, reads the image-pickup information of the user from the contents of the communication (step 714), and transmits the image-pickup information receipt signal to the communication device 12 of the user (step 715). The image-pickup information receipt signal is allowed to contain the received identification number so that among a number of communication devices 12, the specific communication device 12 is informed of the receipt completion. In general, at one image-pickup point, there are responses from communication devices 12 of a plurality of users, and the image-pickup unit 14a terminates the processes at the time when no response is received from the communication device 12 of the next user.

[0079]

The image-pickup unit 14a transmits the above-mentioned image data and image-pickup information containing the identification number and the other information of the user to the server 24. The server 24 records the received image data in association with the identification

number, and as described earlier, later on, allows the image retrieving unit 46 in the image-processing system 26 shown in Fig. 6 to retrieve for the image data to which the same identification number is added, by using the identification number as a key for retrieval, and to output the resulting data.

[0080]

With this arrangement, in the same manner as described earlier, later on, the user is allowed to input the image-pickup information to the image-processing system 26 in a center through the communication device 12 or 12a at the reception counter for the user placed in the center; thus, preparation has been completed for the user to obtain images that have been transmitted from the corresponding image-pickup unit 14a, and accumulated in the above-mentioned server 24, in a form of prints, through the image-processing system 26.

[0081]

As described earlier, with respect to each of the image-pickup units 14, 14a, 14b, ..., the image data as a result of image-pickup operations carried out at each image-pickup point and the corresponding image-pickup information have been accumulated in the memory 24a in the server 24. Fig. 12 exemplifies this state, and in this case, various pieces of image-pickup information, such as the image-pickup time and date, the image-pickup number for each of image-pickup points (image-pickup system number), the image-pickup conditions and the user information (the identification number of the communication device), are stored in the above-mentioned memory 24a in the order of the image-pickup time. Here,

the order of these items may be changed to another order.

[0082]

The above-mentioned image-pickup number for each of the image-pickup points corresponds to each piece of image data, and as will be described later, is used in the image-processing system 26, when a retrieving process is carried out by using the above-mentioned user information in the image-pickup information as a key so that the target image data is retrieved from the image-pickup number corresponding to the user information.

[0083]

In Fig. 12, (1) is an example of a recording operation that corresponds to an image-pickup process that is carried out based upon user information from a communication device carried by a user, and (2) is an example of recording operations that correspond to image-pickup processes that are carried out based upon user information from communication devices carried by a plurality of users. In the case of (1), one image-pickup number corresponds to one piece of user information, and in the case of (2), one image-pickup number corresponds to two pieces of user information.

[0084]

The following description will discuss operations between a user and the image-processing system 26, in the image-processing system 26. In this case, supposing that a reception terminal device is placed on a reception counter for the user in the center, which is additionally placed in the image-processing system 26, the explanation will be given.

[0085]

A user comes to the user reception counter in the center of the image-providing system 22, and sets the communication device 12 or 12a in the reception terminal device (image-pickup information reading unit 44) of the image-processing system 26. After the image-pickup information reading unit 44 has read image-pickup information stored in the communication device 12 or 12a, the image retrieving unit 46 retrieves for the image corresponding to the identification number contained in the image-pickup information from images accumulated in the server 24.

[0086]

Next, in the image-processing system 26, the image thus retrieved is displayed on a monitor 48. With respect to the displaying method, a desired method, such as a method for displaying a plurality of images in an index format and a method in which, based upon image-pickup positions controlled by the system side, a template is selected and an image is displayed in a composite form with the template, may be adopted. By viewing the displayed images, the user is allowed to determine (select) necessary images and the format thereof, and requests prints thereof.

[0087]

Fig. 13(a) shows one example of the displayed images. This drawing collectively shows images that correspond to an identification number of one user, and contains picked-up images at the respective image-pickup points, which are displayed as a list. The user (or the head of a group), as described earlier, desirably selects displayed images, and specifies a layout design of each image to request prints thereof. Based upon the request from the user, the image-processing system 26 prepares

prints of necessary images by using a print-forming unit 40.

[0088]

Here, as described earlier, in the case when a plurality of users join to one image-pickup process, for example, in the case of a group entrance, identification numbers the number of which corresponds to the number of the users who have requested the image-pickup process may be inputted to the image-processing system 26 from the image-pickup unit 14a or 14b, and the image-processing system 26 may carry out mass sorting treatments on these.

[0089]

With this arrangement, when, upon preparing prints, for example, three identification numbers are inputted, images picked up in association with these three identification numbers are displayed so that it is possible to select necessary images. In other words, it is also possible to form photographs of three persons into one print. Fig. 13(b) shows one example of this case. In Fig. 13(b), reference numerals 101, 102 represent images corresponding to the identification number of user A, reference numerals 103, 104 represent images corresponding to the identification number of user B, and reference numerals 105, 106 represent images corresponding to the identification number of user C, and such composite images have not been obtained by conventional systems.

[0090]

In the above-mentioned explanation, it is supposed that the output format of the image-processing system 26 is a print output format; however, as described earlier, it is preferable to allow the system to also use other

output formats, such as output in the form of an image-data storing medium through a medium output unit 40a and image delivery through the Internet or the like carried out by a net delivery unit 40b. Moreover, as will be described later, another method may be proposed in which: the identification number is recorded without requesting prints at that time, and the corresponding image output may be requested later on.

[0091]

In the above-mentioned embodiment, even in the case when a number of automatic image-pickup devices are placed in a wide area such as a theme park, since these many automatic image-pickup devices are allowed to automatically pick images up, it is possible to provide a convenient method to the users, and also to allow the system provider to manage an automatic image-providing system efficiently without causing any time-consuming tasks.

[0092]

Additionally, the above-mentioned embodiment shows only one example of the present invention, and, of course, the present invention is not intended to be limited thereby. For example, in the above-mentioned embodiment, the image-pickup units 14a, 14b and the like have no storing means for picked-up images, with all the picked-up image information being transmitted to and stored in the server 24; however, depending on the system scales, like the image-pickup unit 14, the image-pickup units 14a, 14b may have storing means.

[0093]

Moreover, in the above-mentioned embodiment, with respect to

image-pickup information transmitted from communication devices 12, 12a, 12b, 12c carried by the users to image-pickup units 14, 14a, 14b, 14c, 14d, only the example that uses identification information registered in the communication devices 12, 12a, 12b, 12c is shown; however, in addition to this, the information may include attributes to the users who carry the communication devices 12, 12a, 12b, 12c (such as name, age and sex). In this case, the attributes to the users may be displayed in association with respective prints.

[0094]

Moreover, for example, if desired by the user, the entrance ticket or the like having the identification number recorded therein may be brought home with the user, and the user may transmit the above-mentioned identification number from the home-use computer (Personal Computer) through the network so that it is possible to easily provide convenient service systems in which, for example, images accumulated in the above-mentioned server 24 may be obtained in a desired format at a desired place such as a nearby photo-shop.

[0095]

The above-mentioned image-pickup systems 10, 10a, 10b, 10c, 10d, image-pickup units 14, 14a, 14b and image-pickup cameras 14c, 14d used in the image-providing system 22 are fixedly placed within an area such as an amusement park, a theme park, a ground and a meeting place, and a number of communication devices 12, 12a, carried by users together with ID cards 12b, 12c, are used; thus, the present invention aims at a large-scale system as a preferable example. However, the present invention is not

intended to be limited thereby, and the applicable system may be a system that functions as a portable image-pickup camera assembly formed into an image-pickup unit, and is allowed to form a system in association with communication devices of a card type. For example, in the case of the image-pickup systems 10c and 10d, image-pickup cameras 14c and 14d have a construction suitable for portable image-pickup cameras, while the ID cards 12b and 12c have a construction suitable for card-type communication devices.

[0096]

These image-pickup systems 10c and 10d may be applied to collective photographs and sight-seeing photographs in a tour trip and sight-seeing trip, a group meeting and event and the like (hereinafter, typically represented by a tour trip), and an album editing process and personal order sheet formation that are carried out later. In other words, participants of a tour trip or the like are preliminarily allowed to carry an ID card 12b or 12c, and the image-pickup camera 14c or 14d is carried and used to pick up images of the participants so that the image-pickup system 10c or 10d can be formed. Additionally, ID information registered in the ID card 12b and 12c may preferably include such identification information as to specify sight-seeing spots of the tour trip and group meetings and events, in addition to the ID symbol and number. With this arrangement, as described above, image-pickup processes are carried out by the image-pickup camera 14c or 14d in the image-pickup system 10c or 10d.

[0097]

Upon taking these collective photographs and sight-seeing

photographs, the image-pickup cameras 14c and 14d may be placed as image-pickup units of the above-mentioned fixed type, or the image-pickup units 14, 14a and 14b are arranged, with the ID cards 12b, 12c and the communication devices 12, 12a being held or carried by the participants; thus, the image-pickup systems 10, 10a, 10b and the like may be arranged.

[0098]

In this manner, image data of images of a plurality of subjects, picked up by the image-pickup camera 14c or 14d, is stored in the storing unit 20a together with image-pickup information containing ID information and the like of the corresponding subjects. Moreover, the image-pickup information containing images of these subjects and ID information and the like thereof may be stored in the image memory 20 of the image-pickup unit 14 and the image memory 24a of the server 24. By using these images of the subjects and image-pickup information containing ID information and the like thereof stored in the storing unit 20a and the image memory 20 or 24a, it is possible to edit images for use in album formation and image-order-sheet formation for individual persons (respective subjects). Figs. 14 and 15 show one embodiment of such an image-editing device in accordance with the present invention, which is used for editing images.

[0099]

As shown in Fig. 14, an image-editing device 80 of the present invention, which is used for an album-forming-use image-editing device that carries out image-editing processes upon forming an album, is provided with an image memory 81, an image-retrieving unit 82, an image reading unit 83, a counting unit 84, an image composing unit 85, an image output unit 86

and a display unit 87. Here, in the image memory 81, images of a plurality of subjects and image-pickup information including ID information and the like thereof, stored in the storing unit 20a and the image memories 20, 24a and the like, are read out by a known method, and stored. Here, the image data to be stored in the image memory 81 is preferably stored as so-called image-processed image data that has been subjected to image treatments required for image output.

[0100]

The image retrieving unit 82 retrieves the image memory 81 by using identification information relating to a certain tour trip or the like and ID information of a specific person (subject) of the participants, and extracts the corresponding (hit) images. The image reading unit 83 reads out the image data of the images extracted by the image retrieving unit 82 and the associated image-pickup information (including ID information) from the image memory 81. Here, the image reading unit 83 may read out only the image data of images selected for use in album formation and the image-pickup information thereof. With respect to a plurality of images selected for use in album formation, the counting unit 84 counts the frequency of appearances (that is, the number of picked-up images) of the subject contained in these images for each of individual subjects. Here, the counting unit 84 may commonly serve as a control unit (CPU) of the image-editing device 80.

[0101]

When the frequency of appearances of each of the subjects (individual participants) counted by the counting unit 84 is even or virtually

even, or when it is located within a predetermined range, the image composing unit 85 edits a plurality of images (image data) that are selected for use in album formation and read out by the image reading unit 83 so as to be used for album, and, for example, a plurality of photographic images are placed on one page of an album, as they are, or composed by being enlarged or reduced or trimmed, and placed thereon; alternatively, if necessary, characters, phrases, sentences, line-drawn pictures, characters and the like are combined with these so that image data for each page of the album is formed. At this time, in particular, in the case of a collective photograph, the name of each subject person is preferably put in the corresponding image or on the periphery of the image.

[0102]

The image output unit 86 outputs images (image data) of the respective pages edited for use in album as printed images (hard copy images) with respect to all the pages. The prints of the respective pages of the album, thus outputted, are bound with respect to all the pages to be formed into an album. Here, not limited to an arrangement which outputs the respective pages of an album as hard copy images, the image output unit 86 may have an arrangement which outputs an image-data recording medium having data containing the images of the respective pages recorded therein, or net-work delivers the data through a communication means such as the Internet. The display unit 87 is a monitor (display) to be used for displaying the results of retrieval by the image-retrieving unit 82, the reproduced image of the image data read out by the image reading unit 83 and the image-pickup information (ID information, etc.) thereof, the results

of the counting process by the counting unit 84 and the composite image and the like of the respective pages of the album formed by the image composing unit 85.

[0103]

The image-editing device, used for forming an album in the present invention, is basically arranged as described above; and the following description will discuss the functions thereof. Fig. 16 is a flow chart that shows one example of an image-editing method that is used for forming an album by the image-editing device 80 of Fig. 14. First, at step 701 of Fig. 16, all the image data and image-pickup information containing the ID data thereof relating to a certain tour trip or the like, which is a subject of an album formation, are read by the image reading unit 83 from the image memory 81. At this time, in the case when the image data and the image-pickup information thereof, stored in the image memory 81, are picked-up images relating to a plurality of tour trips, the image retrieving unit 82 carries out a retrieving process by using one portion of the image-pickup information representing the corresponding tour trip or the like so that picked-up images only relating to the corresponding tour trip are extracted and the image data of the extracted picked up image and the image-pickup information thereof are preferably read out by the image reading unit 83. Here, the image-pickup information that is associated with a collective photographic image contains a plurality of pieces of subject ID data.

[0104]

Next, at step 702, reproduced picked-up images of all the image data

read by the image reading unit 83 are displayed on the display unit 87. At step 703, the operator selects images to be used for forming an album from all the picked-up images thus displayed. In this case, in order to allow images to be easily selected for use in album, a plurality of picked-up images are preferably reduced so as to be displayed on one screen, so that the selected individual picked-up images can be displayed in an enlarged manner so as to be easily confirmed. Thus, album-use images the number of which is required for forming the album are selected. Thereafter, the image-pickup information of the images selected for use in album formation is sent to the counting unit 84, and at step 704, the counting unit 84 counts a plurality of pieces of subject ID data contained in the image-pickup information of the corresponding image, and also calculates the number of appearances (frequency of appearances) of each of the subjects with respect to the all images for use in album so that the number of appearances (the number of picked-up images) for each of the individual subjects is calculated. Successively, the number of appearances, thus calculated, is displayed on the display unit 87 for each of the individual persons.

[0105]

Next, at step 705, the operator determines whether or not there are any extreme deviations in the number of appearances based upon the display of the numbers of appearances with respect to individual persons. It is preferable that the number of appearances for individual persons is even or virtually even, and if there are not extreme deviations, the corresponding images can be used as album-use images. Here, the permissible range of deviations in the number of appearances is preferably

set beforehand. As a result of determination, if there are extreme deviations in the number of appearances (Y), the sequence returns to the first step 701, and the following operations are successively carried out: the reading operations of image data and the image-pickup information by the image reading unit 81, the image displaying operation onto the display unit 87 at step 702, the selection of album-use images at step 703, the counting operation of the number of appearances with respect to individual persons by the counting unit 84 at step 704 with the results being displayed onto the display unit 87, and determination as to deviations in the number of appearances with respect to individual persons at step 705. The operations from step 701 to step 705 are repeated until the determination at step 705 comes to show that there are no extreme deviations. Here, at this time, by using the ID number of a subject that has a small number of appearances, the image-retrieving unit 82 is allowed to retrieve for images that contain the corresponding subject so that all the images are extracted, read out by the image reading unit 83, and displayed on the display unit 87; thus, it is possible to easily ensure a process for averaging the numbers of appearances of the individual subjects with respect to the album-use images.

[0106]

In contrast, in the case when the results of determination at step 705 show that there are no extreme deviations in the number of appearances (N), the sequence proceeds to the next image-editing step 706 in which, at the image composing unit 85, a plurality of images selected for use in album, as they are, or after having been subjected to treatments such

as enlarging, reducing or trimming processes, are assigned to the respective pages of an album, or composed into one page; moreover, if necessary, characters, phrases, sentences, line-drawn pictures, characters and the like are combined with these so that image data for each page of the album is formed. At this time, in particular, in the case of a collective photograph, the name of each subject person is preferably put in the corresponding image or on the periphery of the image; thus, image data to be used for the respective pages of the album, which correspond to one volume of album, are prepared. At this time, it is preferable to display the images of the respective pages on the display unit 87 so as to allow the operator to confirm the images.

[0107]

Lastly, at step 707, the data containing the images of the respective pages corresponding to one volume of album is outputted to the image output unit 86. Here, the album-use selected images, the processed images thereof and the composite image thereof may be formed in a separate manner from data such as characters and line-drawn pictures, so as to be outputted in a separated manner. Thus, the image-editing processes for forming an album by the image-editing device 80 shown in Fig. 14 are completed. Next, the image output unit 86 outputs printed images of the respective pages of an album, and all the pages are bound into one album. The subjects contained in photographic images in this album have the averaged frequency of appearances, and are free from extreme deviations in the frequency. The album-forming-use image-editing device relating to the present invention basically has the above-mentioned arrangement.

[0108]

Next, the following description will discuss an image-editing device for use in image-ordering-sheet formation with respect to individual subjects in accordance with the present invention. An image-editing device 90 shown in Fig. 15, which is used for editing images upon forming an ordering sheet for prints (images) of individual subjects, is provided with an image memory 91, an image-retrieving unit 92, an image-reading unit 93, an image-processing unit 94, an image-composing unit 95, an image output unit 96 and a display unit 97. Here, the image-editing device 90 has a structure similar to the image-editing device 80; therefore, with respect to the similar constituents elements, the description thereof is omitted.

[0109]

In this case, the image memory 91 has the same structure as the image memory 81. In the same manner as the image-retrieving unit 82, the image-retrieving unit 92 retrieves the image memory 91 by using ID information of a specific subject, and extracts images bearing the specific subject that have been hit. In this case, in order to specify a tour trip or the like, its identification information may be utilized. Moreover, in the case when a family or a group participates in the tour trip or the like, one portion of the ID information of a specific subject may be commonly used, and by utilizing the commonly used portion, or by using a plurality of pieces of ID information, the retrieving process may be carried out. The image-reading unit 93 reads the image data of the images extracted by the image-retrieving unit 92 and image-pickup information (including ID information) in association therewith, from the image memory 91. The

image-processing unit 94 forms reduced images, for example, thumbnail images, of all the images bearing the subject person. Here, the image processing unit 94 may carry out the aforementioned known image processing treatments so as to prepare well-finished reproduction images. Moreover, the image-processing unit 94 may commonly serve as a control unit (CPU) of the image-editing device 90.

[0110]

The image-composing unit 95 edits the reduced images, such as thumbnail images, of images bearing the specific subject, which have been reduced in the image-processing unit 94, and composes the images, in order to form an ordering sheet for prints (images) of individual subjects (hereinafter, referred to simply as an ordering sheet). At this time, as shown in an ordering sheet 110 for images of individual subjects of Fig. 17, name 111 "Ms. Hanako Fuji" of a specific subject, tour name and title 112 "OO tour photographs: Ordering sheet", "No. 3, No. 7, No. 26, No. 30, No. 34" of order number 114 "Photograph number" that is an order number for the respective reduced images 113 and characters such as "Photograph numbers: Ordered number of sheets", etc. in a filling space 115 for an ordered number of sheets are preferably combined with the thumbnail images that have been edited. Of course, mark, name and line-drawn picture of the laboratory or the shop may be combined therewith.

[0111]

The image output unit 96 outputs the edited and composed ordering sheet having reduced images (image data) relating to the specific subject as an ordering sheet 110 that is a hard copy image. The display unit 97 is a

monitor (display) that displays the results of retrieval by the image-retrieving unit 92, the reproduced images of image data read out by the image-reading unit 93 and the image-pickup information (ID information and the like), the reduced images such as thumbnail images and the like formed by the image-processing unit 94 and the ordering sheet and the like composed by the image-composing unit 85.

[0112]

As shown in Fig. 17, the ordering sheet 110, outputted from the image output unit 96 of the image-editing device 90, has only the selected images always bearing the specific subject and related persons thereof; therefore, among these, the customer confirms the number 114 of necessary photographs (reduced images 113), and only needs to fill the figure corresponding to the number of necessary prints in the filling space 115 for an ordered number of sheets. With this arrangement, by using this ordering sheet 110, the customer becomes free from time-consuming tasks to look for his or her photographs from a number of photographs, and is allowed to order necessary photographs by necessary number of prints very easily. Here, the order may be placed by inputting the necessary number to the filling space 115 for an ordered number of sheets of the ordering sheet 110 displayed on the display unit 87.

[0113]

Here, not limited to the arrangement for outputting an ordering sheet 110 that is a hard copy image, the image output unit 96 may be arranged to output an image data recording medium in which the data of the ordering sheet 110 containing the thumbnail images 113 is recorded, or

to net-work deliver the data through a communication means such as the Internet. With this arrangement, the ordering sheet 110 in the image data recording medium and the ordering sheet 110 delivered through the network is displayed on a monitor (display) of a PC (personal computer) and the like owned by the customer, and among the reduced images 113 of the ordering sheet 110 thus displayed, the customer is allowed to confirm the number 114 of necessary photographs and to input the necessary number of prints in the filling space 115 for an ordered number of sheets so that the image data recording medium is sent to the laboratory or the shop or the sheet is returned thereto by the Internet and the like so as to place the order. Such an ordering method through the network like the Internet is executed by the image-ordering method with respect to individual subjects of the present invention, and this method makes it possible to further reduce time-consuming tasks in ordering photographic printed images and the like, and also to make the ordering processes easier.

[0114]

By means of the above-mentioned various embodiments, explanations have been given in detail with respect to the present invention relating to the image-processing system and the image-providing system to which these systems are connected, as well as to the image-pickup camera, the image-editing device, the image ordering sheet for individual subjects and the image ordering method for individual subjects; however, the present invention is not intended to be limited by these, and with reference to specific examples thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing

from the spirit and scope thereof. For example, in the above-mentioned image-providing system, when the image-pickup unit has picked up an image of the user while visiting a theme park or the like, the reduced image of the picked-up image may be transmitted to a cellular phone carried by the user from the image-pickup unit, the server or the image system side. The user can confirm the reduced image displayed on the display unit of the cellular phone, and if desired, the user can place the order through the cellular phone. The order may be placed through another method. With this arrangement, the user can receive the prints of the ordered image when he or she returns home without the necessity of waiting time. Additionally, the cellular phone may be applied to the ordering method in the image-editing device and the ordering method using the Internet of the present invention.